The Training School Bulletin

FEBRUARY, 1961 Volume 57 – Number 4

The Changing IQ
Barnett

Case Studies
Rigrodsky-Holowinsky

Occupational Training
Burns

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"for the practicing professions concerned with mental retardation"

the training school BULLETIN
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1. Articles of a technical nature, e. g., reports of research, discussion of problems in the field.
2. Non-technical articles of general interest, e. g., human interest stories of the mentally retarded, restatements of technical material for the layman.
3. Book reviews and news notes.
4. In special instances, republication of important articles having limited distribution.

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Editorial:

Statistics and Enlightenment

For some reason we have noted in recent months what seems to be an increase in the number of articles relating to the use and value of statistics as a professional tool. Some are quite critical of what they thought was an exaggerated image of the importance of statistical procedures in many professional workers' minds.

With statistical procedures we have little quarrel. They are mathematical formulae for amassing, comparing, and analyzing numbers as specifically and as accurately as possible.

Most problems arise before or after statistical procedures are used. Original data collected must be representative and germane to the hypotheses being questioned. Unfortunately much original data by close inspection can be considered quite subjective. This introduces an empirical element into the data that can weaken all further manipulation of its substance. Probably we fool ourselves at times with our satisfaction at obtaining truly objective data, but certainly it is toward this direction we must work and be extraordinarily critical from this point of view of all raw figures we collect. Otherwise no amount of statistical alchemy can produce noble results.

Later, once we are finished with statistical procedures, our ability to interpret them competently makes the difference between effective demonstration and emasculation. We cannot interpret the results of statistical procedure if we are not well acquainted with the procedure itself. We must know its strengths and its directions and which procedures lend themselves best to the matters at hand. Only then can we interpret results to obtain valid understandings that will lead us to new questions.

We know everything can be measured, but once measured can it all be understood in relation to existing knowledge? Reading the summaries and conclusions of many published articles makes one wonder.

W. J.

Toward A Realistic Approach To The Changing IQ

charles d. barnett

The ever intriguing question as to whether we are a product of our heredity or our environment is one which has been asked at varying levels of technical sophistication, and one still encountered throughout both professional and popular literature. Probably no other single area of this issue has been more thoroughly explored, exploited, and frequently misrepresented than that of "intelligence", or its test counterpart, the IQ. For the majority of individuals, whose intelligence meets or exceeds the norm, the issue is without interest or appeal. However, for the parents of children whose capacities fall in the retarded range, the question of whether IQ can change is not only of great concern, but one which often appears to hold the key to many doors of future happiness.

Too frequently, professional writers have avoided attempting to communicate rather general information about intelligence and the IQ test to the public. As a result, and as has been true of almost every concept which has been held in quasi-secretive status by the sciences, public suspicion has been aroused. Value judgments of "good" and "bad" have all-too-often been applied to the IQ concept and, unfortunately, mostly by popular writers who have often been only vaguely familiar with the many sides to the issues involved. Perhaps the greatest confusion and hurt has resulted from the presentation and acceptance of only one side of the argument. Consider, for example, the recent upsurge in articles which exuberantly proclaim that the IQ does change and that great hope exists for that one to three percent of our population falling into the retarded range. Take a recent article appearing in a nationally circulated publication as a specific illustration. Entitled, "IQ Variability Called A Hopeful Sign", the article states, ". . . contrary to initial theories, a child's IQ can and does change. sometimes very markedly, as the disposition to learn is encouraged or thwarted" (Unsigned, 1960).

Even allowing for some distortion of meaning due to a loss of context, this statement seems to clearly imply that environmental variables can be manipulated in such ways as to raise the IQ. Perhaps more important, it may mean to the parents of retarded children, many of whom already experience great guilt and indecision as a result of their situations, that if their child has not progressed in intellectual development, that

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the disposition to learn *has* been thwarted. A further implication of equal consequence, is the implied assumption that a change in a derived test score, the IQ, automatically insures that the behavior to be promulgated will follow. In anticipation of points to be made later on, while there is relatively little difference of professional opinion as to the fact that the IQ can and often does change somewhat, close scrutiny should be directed to the assumption that the behavior to be engendered follows automatically. Furthermore, the preceding quotation fails to make mention of any of the many other factors which can cause intelligence to *appear* to change, i.e., is every change in intelligence test score to be construed as equally meaningful? Perhaps an historical review will set the scene for taking a new and more analytic view of the changing IQ concept.

Breaking The Hereditary Tradition

Approximately one hundred and fifty years ago, the role of heredity in determining human potential was well established and accepted. Both physical and mental handicaps were accepted as afflictions which could be altered only insignificantly. Gradually, however, with the advance of medical science of the day, the more obvious types of exceptionalities came to be dealt with. Similarly, the scientific study and training of the retarded had its beginnings in the areas of the blind and deaf (Wallin, 1955). In the wake of progress with these disabilities, interest in the mentally retarded was to come. The immediate occasion for such interest was the discovery of a so-called "wolf-boy" by huntsmen in Southern France around 1800. Said to have been roaming the woods with wolves, the boy was completely lacking in the social skills of dress, speech, eating. etc. Victor, as the boy later came to be called, was brought to Paris for further study and was pronounced an "incurable idiot" by Philippe Pinel, a leading medical authority on mental disorders. Pinel, in believing that nothing could be done for the "wolf-boy", reflected the strong conviction of the times that, once heredity had placed its limitations, environmental influences (training) could accomplish little, if anything. But Jean Itard, a physician at the Institute for the Deaf in Paris and an ardent disciple of Rousseau (all things of the mind come from sensory experiences), expressed an interest in attempting to socialize Victor, much to the ridicule of his fellow workers. Although Victor died at an early age, Itard's prolonged efforts over several years brought about remarkable improvement in his pupil (Itard, 1932). At the time of his death, the boy could speak several words, dress himself, perform some academic duties, and in other ways demonstrate the fact that, due to training, he was a more socialized being. The French Academy of Science, duly impressed with Itard's accomplishments, gave special recognition for his work. Perhaps most important of all, Itard's efforts had served to somewhat loosen the bonds which held that heredity was the sole determinant of capability. But it was Itard's pupil, Edward Seguin, who was

to carry the concept of training to the point of professional respectability (Seguin, 1907). Through Seguin's efforts, schools for the training and care of the retarded sprang up in Europe and the United States. Other workers, too, (e.g., Montessori, 1912) were able to demonstrate the positive efforts of various types of training procedures, and the issue of the role of heredity and environment in the determination of human potentials was more clearly defined. Thus, the pendulum was to swing from heredity to a strong emphasis on environment as the chief determining factor — a movement which, as we shall see later, culminated in the middle 1930's as one of the most interesting theoretical issues in the history of psychology.

The Mental Test Movement

Concomitant with the developing heredity-environment question, a start was being made in the development of tests of mental measurement. Foremost among the early workers in this area was Sir Francis Galton, who noticed early that individuals differed significantly in their ability to make various kinds of discriminations (Galton, 1883). In one attempt to quantify this ability, he devised the Galton Weights which, in a sense, was one of the very first intelligence tests. Requiring a subject to discriminate between various weights of similar size, Galton found that a rough sorting of individuals could be made on the basis of how fine a discrimination could be perceived as the weights presented became more alike.[1]

A more formal approach to measuring individual differences came about in 1904, as a result of the French Ministry of Education's concern over the apparent inability of some children to make normal academic progress in the Paris schools. Appointed by the Commission, Alfred Binet and Theodore Simon set about to devise a screening procedure which would be effective in identifying such children (Binet and Simon, 1914). Their efforts culminated in the first version of the Binet-Simon Intelligence Scale (Binet and Simon, 1916). For these workers, attention and adaptability, along with good judgment were the most important aspects of intellectual behavior. Their Scale represented a clear step forward by attempting to devise a variety of questions and items which would measure these many facets of behavior. This is in marked contrast to the efforts of Galton and others where the emphasis was on a single discriminative ability. Another advancement represented by the Scale was the idea of *standardization,* or trying out the test to see how people actually performed on it. In 1908 the test was modified, expanded, and for the first time items were arranged into age-groups. Whenever a particular test item was passed by from 50 to 90 percent of a given age group, Binet considered it a fair item. If nearly all six-year-olds passed a given test, it was obviously too easy for children of that age; on the other hand, if all 10-year-olds failed a given test item, it was

[1] *For a concise and readable account of the early history of the testing movement, the reader is referred to Garrett (1941).*

clearly too hard for that group. The 1908 test is further important because it first employed the concept of *mental age* (MA), which was dependent upon the number of tests in the scale a child could successfully complete. For example, if he passed all items assigned to the eight-year-old, he was said to have a MA of eight, regardless of what his chronological or real age was.

The Binet Scale was revised a third time in 1911, shortly before its author's untimely death. It was introduced into the United States in 1908, where it was initially adapted at The Training School at Vineland by H. H. Goddard (Goddard, 1910). Other revisions and modifications followed. By far, the best known revision has been that of Lewis M. Terman of Stanford University in 1916. This Scale is generally known today as the Stanford Revision of the Binet or, more simply, as the Stanford-Binet, although an additional revision was made by Terman and Merrill in 1937 (Terman, 1916; Terman and Merrill, 1937). While the term *intelligence quotient* (IQ) was first used by a German psychologist, William Stern, Terman popularized it in the 1916 revision. Simply put, the IQ is the ratio of the mental age to the chronological or real age. For example, a child of six with a MA of six years has an IQ of 6/6 equals 1.00. This is written as 100 since it eliminates decimals. Similarly, a child with a life age of six and a MA of three years has an IQ of 3/6 or .50, written 50. Thus, it can readily be seen that the MA concept is intended to describe the intellectual status, whereas the IQ indicates how bright or slow a child is *in comparison with others of his chronogical age.* It is also obvious that an eight-year-old child with an IQ of 75 (MA would therefore be 6) would be further advanced, *actually,* than a four-year-old with an IQ of 100 (MA is 4), though not *relatively.* It may readily be seen, therefore, that the IQ alone tells us only about the rate of development.

Following the original scale, other workers were quick to follow Binet's lead. Gradually, other intelligence, achievement, aptitude, interest, etc. tests were developed. In particular, the world wars served to accelerate the test movement. One of the most important concepts in testing and one which gave impetus to the original Binet undertaking is the notion of *prediction.* Binet was interested in predicting school success, and while it was found that children making higher scores on his scale tended to succeed more often in school, exceptions commonly occurred. This was often due to emotional or personality characteristics of the subjects which were not always reflected in the test scores. Thus, the role of nonintellectual factors in success at a task was soon realized, along

with the observation that rather noteworthy differences could exist between an individual's *situational* performance on a test, and his *characteristic* performance outside the test situation.

The Heredity-Environment Issue of the 1930's

But what about the nature-nurture controversy? Had it died out during this period? Definitely not. The arc of the pendulum had almost effected a complete turnabout from the initial emphasis on heredity to that of the environment as the chief determining factor in intellectual capacity. Furthermore, the 1930's saw the peak of professional debate on this issue. While many factions were involved in this colorful argument, only a brief account can be presented here.[2] Those taking the environmentalist viewpoint produced numerous studies demonstrating that, under optimal conditions of stimulation, mental status could be altered, often greatly. The nurturists, researching with an equal conviction that hereditary limitations were difficult to transcend, demonstrated the fruitlessness of environmental stimulation. A chief medium of the latter group was to study identical twins who had been reared apart from birth after placement in adoptive homes, (heredity the same, environment different). The high similarity of these children's IQ's several years later was taken as direct evidence against the influence of environment. Both sides offered complicated statistical studies to reinforce their positions, even reaching the point of claiming to have isolated that portion of the "person" attributable to environment, and that portion due to heredity (Burks, 1928). Depending upon the interest of the researcher, evidence for both sides was readily available. When the academic dust had settled, several facts became clear. In the first place, it was obvious that an individual cannot be separated from his heredity or his environment. In actuality, they interact, one upon the other, to make us what we are. Secondly, both sides had made exaggerated claims, often based upon too few cases. Finally, it became obvious that the question as to whether IQ's could change could be answered in the affirmative; however, the question of why or how they changed was left generally unanswered. To gain some amount of closure on the heredity-environment issue, today it is generally held that heredity sets some kind of rough limits upon the individual, within which environment functions to develop or inhibit the potential present. Briefly, then, we have traced the pendulum swing of the chief factor in determining intellectual potential from heredity to environment, and now back to a more middle ground position, acknowledging the importance of each. Despite, however, the twenty-plus years that have lapsed since these studies, many writers are just getting around to issuing the proclamation that the IQ is not a constant.

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[2] *Readers wishing to extend their knowledge regarding this topic are referred to the following references: McNemar* (1940), *The Twenty-seventh N. S. S. E. Yearbook* (1928), *The Thirty-ninth N. S. S. E. Yearbook* (1940), *Stoddard* (1943), *and Wellman, et. al.* (1940).

Evaluating A Change In Test Score

Accepting the finding that IQ's can and do frequently change, the question of *why* or *how* they change would seem to be the topic of current interest. More specifically, can the IQ score change without necessarily indicating any variation in basic intelligence? Put another way: Does a change in IQ *always* indicate that some underlying behavior has also changed? Most assuredly, the answer to this second question is "no". Let us look at some of the reasons why. First of all, in recalling our brief contact with how the intelligence test is constructed, it will be remembered that different intelligence tests often measure different things. Thus, Galton's kind of "test", based on a single function, might be expected to give an entirely different sort of picture of an individual than the Binet Scale, which measures many functions. While most modern tests make at least an effort to measure several aspects of intellectual behavior, the test constructors still support different beliefs as to what basic intelligence is and as to how it can best be estimated. Thus, if Johnny earns a score of 60 on Test A, and, later on, a score of 70 of Test B, this could simply mean that different abilities are being measured, and that no actual progression has occurred in the behavior represented. It is possible that the same scores could have been obtained if the tests had been given only minutes apart.

To further illustrate the importance of different tests and their effects on the measured intelligence, consider the special tests that have been designed for certain groups of exceptional children. Obviously, a deaf child would be quite handicapped on a test where both audition and speech were required. The fact that he is able to earn a given score on a test specifically designed for the deaf, and emphasizing instructions given in pantomime, does not change the fact that he is deaf. It does indicate that a redefinition or new estimate of the "X" that is intelligence has been obtained, based primarily on the functioning of the sensory modalities that remain intact. To summarize, scores on different tests even though identical, may be measuring entirely different kinds of abilities. Even on the same test, identical mental ages may be obtained and the underlying abilities represented be quite different.

A second factor in accounting for variation in test scores is that the human organism, like all organisms, performs differently at different times. It is not uncommon for variation in test scores to occur from day to day on the same test. Such factors as physical health, attitude, motivation, etc. can all act to influence test performance of an individual at a given time. As these variables change, so can the test score change, though typically not significantly. In situations where individual testing is conducted, as in the case of Binet, differences in the examiners — their personalities and training — is another factor which professional workers readily recognize can affect a child's performance.

Still another factor which has confronted test developers is the problem of predicting the intellectual growth of a young child or infant. This situation is very real for adoption agencies and others who need to assure parents that the child they are about to adopt, often from unknown parentage, will develop into an adult or normal potential. Although many efforts have been made to develop infant intelligence scales, thus far, test scores based on such techniques agree very little with subsequent findings obtained when the infant has reached maturity (Honzik, Macfarlane, Allen, 1948). A primary reason for this state of affairs is the necessarily restricted approach that infant scales are able to utilize. By and large, only developmental kinds of items or subtests can be employed, e.g., Does the child sit up? Pull up? Walk? etc. Little cognizance can be taken of such ultimately important factors as speech, reasoning, judgment — all quite prominent in the intellectual behavior of the adult human organism.

A fifth factor, of course, to be considered in a situation where a change in test score occurs, is that some change actually does take place in the abilities underlying the test. However, the fact that the IQ remains constant in a given situation, does not imply that certain underlying behaviors are not in the process of change. In the case of the average child, for example, where mental age and chronological age go hand-in-hand, the expected value of the IQ would remain relatively constant, e.g., be 100. Thus, for this child, lack of variability in the IQ may be a good sign. That is, if he has a MA of 4 years at the age of 4 and a MA of 8 years at the age of 8, his IQ in both instances would be the same and would certainly be a healthy sign that development has been right on schedule, so far as the intellectual functions are concerned.

Recognizing the problems involved, it becomes apparent that an increase or decrease in IQ must be interpreted cautiously. In the case of Victor, the so-called "wolf-boy", it is obvious that had formal intelligence tests as we know them been available, he would have likely demonstrated a marked improvement in test score. More important, however, changes in his adaptive behavior could have been noted. Theoretically, however, we have little to go on in the way of knowing if this child may or may not have had potential for developing normally, that is; perhaps in his case the environment had restricted the potential which heredity had given him. When the situation is somewhat reversed — that of a child who, due to brain damage or other cerebral impairment, would not reasonably be expected to develop normally — one might question the degree to which training would be expected to affect the intellectual status unless, of course, restricting environment conditions had been severe. With such a multiplicity of interlocking factors, is there any doubt as to why psychologists, educators and other workers have been quite reticent in presenting test scores to parents directly?

The writer has seemingly placed himself in the awkward position of having indicated that intelligence testing is to no avail, that scores mean next to nothing, and that the parent should feel free to dismiss psychometric examinations as meaningless. Such a feeling is not intended. In the hands of a trained professional examiner, aware of the foregoing problems, the test affords a ready situation for observing the problem-solving ability of the subject. In addition, the opportunity is provided for observing other aspects of his personality and social functioning in a controlled situation. It *is* meant to be implied that all too frequently parents, and even some professional workers, are ready to accept scores or numbers without knowledge of what they mean, or without a consideration of the underlying behavior represented by the score. It is for these reasons that a confidentiality of test score is preferred and a preference shown for reporting the results in more general and descriptive terms. This seeming secrecy stems not from the fact that the data are magical; quite to the contrary, this reservation has resulted from the professional worker's awareness of the shortcomings of the test and of the many strides that are yet to come. Occasionally, one hears a parent announce his child's IQ with the same degree of certainty as announcing that he has two ears or two hands. Yet, the IQ alone fails to give indications of interests, motivations and special abilities. How many of us have observed a friend or acquaintance who, though obviously not exceedingly bright, has persevered to the point of outstanding success in his life work?

A Multiple Factor Approach

Primarily due to an awareness of these many problems involved in intelligence testing — that of interpreting different test scores; that of assessing fluctuations in individual performance; situational vs. characteristic performance; intellectual measurement at different stages in the life of the organism, as well as the need for considering other factors in intellectual functioning — the IQ has come to be professionally recognized as only one of many factors that need be considered in describing a given individual or in making predictions about his performance in a particular situation. The same would hold true whether we consider a "genius" or a retarded child. As further evidence of the movement away from the singular usage of the IQ in describing and predicting behavior, the term "genius", itself, is rapidly disappearing from professional usage. Once referring to approximately one percent of the general population with IQ's in excess of 140, it is rapidly being replaced by the term *gifted,* which has proven more useful. Being defined in terms of special talents and aptitudes, the term gifted implies that a child may be quite average, even below average in some respects, but have special talents in one or more specific areas, such as art, music, etc. Similarly, at the lower end of the intelligence continuum, the American Association on Mental Deficiency has recommended discon-

tinuation of the old IQ-defined labels, "Idiot", "Imbecile", and "Moron". In their place, a system of levels has been proposed, with a ranking from Level I (most severely retarded and with little academic, social and vocational potential), to Level IV (mildly retarded, with almost normal academic, social, and vocational potential). This system further acknowledges that the level of a given individual is subject to change with time and/or treatment, and that it represents the best description of the individual's functioning at that time only (Heber, 1959). Thus, at both ends of the intelligence continuum, continued use of the IQ concept is employed, but in conjunction with other equally important measures. While professional efforts have gone far toward reducing the IQ concept to a more realistic and meaningful role, continued emphasis on this single measure will undoubtedly be used by many individuals. For this narrowing group, being able to assign a numerical label to an individual apparently brings naive satisfaction.

In returning to our original quotation, relating to IQ variability, the provision of appropriately stimulating experiences certainly can, within limits, better equip the child, retarded or normal, to cope with life and its many problems. However, a failure to make continued and clearcut progress in the case of the retarded child should not necessarily be viewed as a failure on the parents' part to provide the necessary conditions for learning. Seeking professional guidance can frequently serve to assist in arriving at a realistic appraisal of a given child's potential. Similarly, as parents and professional workers, let us avoid warping our own sense of values to the degree that we make animated beings of these children, cramming them full of clever but often useless and non-adaptive information and routines which they rotely reproduce, but fail to understand. The value of this form of stimulation would seem to be more important to us than to the child. Let us, rather, place appropriate emphasis on the assets and liabilities of these children, viewing them in terms of their behavior and not in terms of test scores, which are but the attempts of a young and growing science to quantify its subject matter. To the extent that such test scores aid in providing descriptive information about a child, let us use them; to the extent that they force communality upon an otherwise heterogeneous group of individuals, let us look beyond such scores in an attempt to describe individual children and groups of children in operational terms involving more meaningful behavioral measures. Undoubtedly, as behavior science matures, new and increasingly meaningful measures will become available.

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CASE STUDIES: A Description Of The Development Of Two Mentally Retarded Individuals Following Treatment And Training

seymour rigrodsky and ivan holowinsky

In recent years there has been a tremendous surge of interest in the field of mental retardation. Educators, therapists, researchers and administrators are interested in developing new techniques, procedures and therapies that would enhance and enrich existing programs. Within public school systems many special classes have been established and a vast array of technical research programs have been initiated and developed. As a result of years of careful, thorough and detailed study of the mentally retarded individual a number of private and state institutions for the retarded are in the enviable position of being able to provide useful information necessary to sustain and maintain these special programs. Even a cursory review of the literature would reveal that a great deal of thought and production is being offered by these institutions in an effort to share experiences with others interested in the mentally retarded.

In the course of counseling parents of mentally retarded children it is customary for clinicians to advise parents on the type of program that the child will require. A decision often has to be made whether a child should be institutionalized or whether he would benefit from home care and special schooling. Obviously family factors, and the child's level of performance greatly influence this decision. It would be helpful to parents if diagnosticians could point out the positive aspects of institutionalization, including the programs that are available at these facilities.

In addition, teachers of mentally retarded, especially of the severely retarded, usually do not have the opportunity to see the development of their children over a period of years, and often wish to know what changes occurred as the years progressed.

The aim of this paper is to present the training and developmental history of two children, over a period of years, for whom the prognosis at time of admission to a private residential school for the retarded was considered poor for improved socialization, language, and academic growth.

This subjective longitudinal study of two children drew upon the wealth of case information, careful programming and extensive follow-up system that is available at The Training School at Vineland, New Jersey.

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Using the available records it was possible to outline and discuss the development of these children since their admission to The Training School. Both cases are examples of the physical and mental growth that is possible following closely supervised medical, social, and psychological assistance. The test information and behavior descriptions used in this report were obtained from the yearly Cottage Life, Medical, Psychological, Education, and Speech and Hearing departmental reports and from the background information supplied by the parents at admission. Since the information was taken from case descriptions compiled over a number of years, various examiners' reports have been utilized. It should be stated that both authors have had opportunities to test and evaluate the two individuals described in this study.

There is no doubt that controlled statistical studies of large samples of individuals are the most efficient and reliable manner in which to describe group and individual differences, and that case studies are subject to serious error if one attempts to generalize. However, with an understanding of the limitations of case studies, especially the use of subjective reports, this type of study can provide the professional reader with the descriptions of a program that had been successful in furthering development. The Training School BULLETIN has in the past published a number of case studies (Glass, 1959; Gottsleben, 1956; Lauber, 1955; McIntire, 1937) describing cases of successful vocational placement, pseudo-retardation, etc., that have been of great value to those interested in the training and treatment of the mentally retarded.

CASE I

Billy L.

Background Information

Billy was born on May 20, 1949. The pregnancy was uncomplicated, labor lasted three hours with an easy delivery. The family history is normal. At two weeks of age he became seriously ill with a urinary tract infection, a colon bacillus septicemia and jaundice. He sat alone at one year, walked alone at eighteen to twenty months, but at six years of age still was unable to talk. Admission to The Training School was advised because of lack of speech and mental retardation.

Admission Reports

Upon admission to The Training School in 1954 Billy appeared to be of a very low intellectual status. He did not make any attempts to take care of his basic needs, had to be dressed and bathed, had difficulty with eating and was almost completely dependent. Destructive and random behavior was exhibited in the cottage. He did not talk nor did he play with anyone. He usually stood around without moving much and almost continually played with his genitals. A psychological examiner observed that it was very difficult to make an accurate estimate of his intellectual functioning. A long term management problem was anticipated.

Observation and Diagnostic Reports

After two months of residence at The Training School Billy began to show some improvement. He was not as excitable as previously noted and although he did not take an interest in any activity with other boys, he was not as destructive or unmanageable as he was during the first few weeks. In the classroom (Pre-Primary) Billy participated in activities only to the extent that he was physically present. He did not join in games and the teacher stated that he did not appear to be ready for a school program. However, he was kept in the school program for the entire year. He did not try to talk and speech therapy was initated.

Departmental Reports

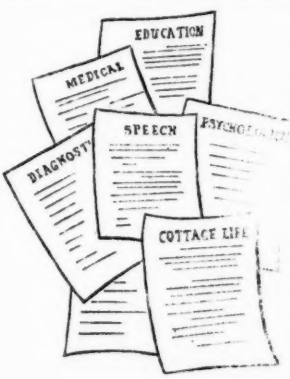
A psychological evaluation done in December, 1955, one year after enrollment, reported an estimated M.A. 3-0, I.Q.46 on the Stanford-Binet L. This was the first psychological evaluation completed since admission. The mental age was estimated from performance items only. On the Porteus Mazes, Billy tested between three and four years of age. This time Billy's behavior did not seem strikingly bizarre. He was fairly attentive but would flare up if corrected. In the classroom, there were times when he was still destructive and resorted to tantrums. When given individual attention and occupied by himself he was more contented. He was able to put together simple puzzles, could cut but not on a line and was able to recognize green and red. By this time Billy was in a speech therapy program. Rapport had improved to the extent that he was imitating some sounds that were produced by a therapist. Several simple syllables were used consistently to designate objects. At this time the prognosis for speech development was guarded and the therapist believed that if Billy was sufficiently motivated he might acquire a meager, but basic vocabulary. Report from the Cottage Life Department dated December 20, 1955 showed that Billy had progressed in all areas. He was losing his temper only when denied attention and this was solved considerably by the little chores assigned to him in the cottage.

Records show that the next evaluation occurred in February, 1957, three years after admission. On the Columbia Mental Maturity Scale Billy obtained a M.A. 4-1, I.Q. 53. On the Vineland Social Maturity Scale he obtained a S.Q. of 74. During psychometric testing he was less distractible and appeared to comprehend simple instructions. Peculiar gestures were not observed on this occasion. In the classroom he had made definite progress over the past three years. He was quite responsive to praise and accepted supervision fairly well. He was now able to recognize four or five colors and could color within lines. He could also recognize many objects and pictures. He had received speech therapy for the past two years. A multi-sensory approach was attempted as well as picture-card naming, socio-drama, and music and rhythm practice. Steady gains in language development were apparent and improved attitude toward learning was quite evident. He

began to imitate words in fair approximation and occasionally was spontaneously naming an object or a picture.

A psychological report dated March 5, 1958, four years after admission, noted M.A. 5-0 and I.Q. 57 obtained on the Leiter International Performance Scale; M.A. 3-10, I.Q. 42 on the Columbia Mental Maturity Scale. The examining psychologist noted that Billy seemed to welcome the contact with an adult primarily to seize an opportunity to cuddle, seek affection and attention. Conceptual thinking was still greatly defective. In the classroom his adjustment began to show further improvement and he definitely responded to praise and encouragement. At this time the Metropolitan Readiness Test indicated that Billy was at a high normal readiness level. In a small leather-working project his handwork showed excellent coordination and judgment. He was participating in dramatic skits and expressive units. Billy's teacher was of the opinion that he was performing on a high kindergarten level and showed promise of the achievement of an educable child. A commendable change took place in Billy's behavior in the cottage. Self-help was his best social achievement. The house-parents recommended transfer to a more advanced cottage. Considerable improvement occurred in Billy's speech. While still defective his speech became fairly intelligible. The nature of the defect was in the form of substitutions, omissions and distortions. However, Billy was able to make his needs known and was able to function adequately in an institutional setting. There have been continued gains in language development and he was now using up to five word sentences. After four years of residence at The Training School, as definite improvement in behavior, language production, and educational achievement occurred beyond original predictions, our view for continued growth and development was now more optimistic.

Psychological evaluation in July, 1959, showed WISC's full scale I.Q. of 45. The psychologist reported that Billy was very prone to giving up on tasks he could not do immediately. The greater number of his failures were due to inattentiveness and impulsivity. Billy's thought processes and ideation were poor hence he encountered difficulty on tasks requiring thought formation, abstraction and comprehension. The examining psychologist was of the opinion that Billy had made considerable emotional improvement. He did not exhibit any of the behavior trends previously observed. In the classroom Billy showed higher frustration tolerance. He no longer had tantrums but cried quietly if he could not have his own way. He still preferred to play alone and to stay close to the teacher. Billy was able to read short sentences and to spell two or three



letter words. He was now capable of recognized 75 sight words and printing legibly. During this year, he participated in a unit on American Indians and food for children. In arithmetic he was now able to count to 40 and add to 10. In the social area Billy made a satisfactory adjustment to his new cottage. The programs at this cottage were more advanced and demanding than those offered in Billy's residence of last year. As reported by the houseparents he was capable in all areas of self-help and needed only limited supervision. He had shown good ability with both peers and staff. The speech therapists reported that Billy showed definite improvement in the area of abstract language usage, sentence length and in the intelligibility of his speech processes. Continued growth in language usage was anticipated.

The latest psychological evaluation in July 1960, showed the following results:

WISC: Verbal I.Q. 56; Performance I.Q. 54; Full Scale I.Q. 51
Ammons Full Range Picture Vocabulary Test: M.A. 6-5, I.Q. 58
Witmer Form Board: median of the 7 C. A. group

The examining psychologist observed that in view of Billy's past history he had made remarkable progress in speech and adaptive behavior. During the session he was still hyperactive and distractible but fairly reliable testing was possible. In the opinion of the psychologist, with better attention and increased emotional maturity Billy may eventually perform at an even higher level. A school report showed that Billy made excellent improvement over the past year. His special interests are active games, bicycle riding, swimming and ball games. At the present time he is in the drum and burgle corps playing the drum. His relation to children is friendly and he is cooperative. At times he likes to be alone but is learning to share with others and take his turn when playing games. His present academic program consists of spelling, phonics, reading, number work, physical education, music, art, home economics, school plays, and speech stimulation. He is now beginning to read at a high first to second grade level and with much attention he does well. His writing is a large legible manuscript. Definite progress is noted in his speech and language development. Improvement is most apparent in general intelligibility, sentence structure and length and auditory memory. Articulation skills have also developed although several articulation errors still occur. Therapy at this stage has been directed to articulation development, increasing sentence length, increasing auditory memory span, concept development, and improvement of sentence structure. Prognosis for continued speech development is good.

The cottage parents mention excellent habits concerning eating, sleeping and self-care. On the Vineland Social Maturity Scale he obtained a S.Q. of 81. They report he is willing to try to do anything with only a minimum of supervision necessary. Billy takes complete care of his personal needs, bathes himself, makes beds, cleans rooms and helps with dishes.

Discussion

At time of admission to The Training School, at approximately five years of age, Billy exhibited extreme distractibility and hyperactivity and could not be managed at home. He needed help in all self-help areas, and did not appear ready for any school programs. Psychological impressions indicated that he was functioning at a low intellectual level. Our initial impressions indicated that he would be a long-term management problem.

However, over a relatively short period of training, five years, improvement occurred in his behavior, self-care, academic and language achievements, even beyond our original expectations. It would be difficult to assess his program in order to determine the factor that played the most important role in Billy's positive growth. Clinical impression would indicate that the therapeutic climate of The Training School, providing a stable home environment, nursery school and speech therapies greatly influenced Billy's behavior.

CASE II

John P.

Background Information

John was born on January 13, 1942. Both of his parents were college graduates and the father had an executive level occupation. Two younger siblings of John were reported as normal. Pregnancy was uncomplicated. Labor lasted 15 hours and no instruments were used. John's early development was reportedly slow. He sat alone at approximately a year, stood alone at 20 months, used words clearly at four years and sentences at six years of age. Application blank stated that glutamic acid and Dilantin were administered but there was no specific data on this.

Admission Reports

Upon admission to The Training School on August 3, 1951 he was described as a moderately retarded youngster. His responses and speech quality suggested the possibility that he might have suffered from a hearing loss. Physically, he presented a female type of body with marked underdevelopment of genitalia. He was described as a very passive insecure youngster who remained at the periphery of the program at the school. During his first two weeks at The Training School he remained apart from his group although considerable effort had been expended toward helping him to achieve more effective socialization.

Observation and Diagnostic Reports

Psychometric evaluation as of October 5, 1951 showed the following results:

Stanford-Binet L: M.A. 4-9, I.Q. 49
Goodenough Draw-a-Man: M.A. 5-5
V.S.M.S.: S.Q. 40

The examiner suspected that the results were affected by John's distractibility and lack of attention. Following the observation and diagnostic period audiometric and endocrinological examinations were recommended. John was examined by an endocrinologist who diagnosed him as a case of adiposo-genital dystrophy or Froelich Syndrome. Treatment with extract of Thyroid and antuitrin "S" was recommended.

Departmental Reports

The next psychological evaluation done in 1952, one year after admission, failed to show any improvement, the results were:

Binet L: M.A. 4-7, I.Q. 43
V.S.M.S.: S.Q. 52
Bender-Gestalt: Very primitive.

John's overt behavior was represented by sluggishness, sleepiness and psychomotor retardation. As a result of his apparently poor physical condition he was highly distractible and inattentive. Responses when finally elicited were confused and it was obviously an effort for John to talk. However, in the classroom situation he began to show some improvement. His school program at that time included academics, woodwork, domestic arts, physical education and occupational training. The academic program consisted of expressive units at a primary level. When unable to share in group activities he asked for individual assignments. A routine psychiatric evaluation failed to reveal any significant personality problems.

Psychological evaluation of November, 1953, two years after enrollment, showed the following results:

WISC Verbal I.Q. 47; Performance I.Q. 43; Full Scale I.Q. 43; Est. M.A. 5-1.

Goodenough Draw-a-Man: M.A. 5-6
H.T.P.: Poor visuo-motor coordination
V.S.M.S.: S.Q. 66

The examining psychologist was of the opinion that John had probably reached his top level of intellectual development. In the beginning of the school term John participated eagerly in academic classwork. He made progress in number recognition and enjoyed activities centered around picture workbooks. For the first time he found such satisfaction in an activity that required his full attention that he cried when the task was changed. During this year John made progress in his social maturity prominently in the self-help areas. He became capable of taking care of all his basic needs, eating, bathing and dressing with a minimum of assistance. Reliable audiometric testing could not be administered because of his distractibility and short attention span. Speech was almost inaudible and he used a minimum of speech. In view of his physical condition John was continued on the thyroid medication.

The yearly evaluation in December, 1954, showed approximately the same rate of growth in intellectual functioning. (Stanford-Binet M: M.A. 5-3, I.Q. 41). At the beginning of the examination he appeared to have a great deal of difficulty in hearing the examiner and most questions had to be repeated at least once. However, in the testing proper John did not show this difficulty in attention and comprehending. Formal audiometric evaluation was still not possible and a slight hearing loss was suspected. Further improvement was observed in his school work and he began to participate in class activities. Emphasis of his school program was now placed on developing manual skills with some academic activities. He enjoyed working in the garden and taking responsibility for the tools. He required constant supervision but work was done well under supervision. He became more interested in doing things for himself rather than watching or saying "I can not." At this time a loss of weight became very pronounced. Previously he was described as an obese boy with feminine fat distribution. Diet and medical treatment appear to have eliminated much of the physical symptoms of John's endocrine disorder.

During the psychological evaluation of June, 1956, five years after admission, he presented much the same picture as described in the past year's evaluation. Mental age had increased proportionately to the chronological age so that there was no significant change in the I.Q. which was found to be 44. (Stanford-Binet Form L: M.A. 6-4). The personality picture was of passive compliance with withdrawal under pressure. Interest in active sports was expressed but apparently he did not participate. In school he became increasingly interested in opportunities presented. He especially enjoyed the manual activities schedule and showed good progress and improvement in basic shop and woodworking areas.

Medical report as of August 1, 1956 mentioned hyperglycemia and glycosuria and the diagnosis of diabetes mellitus. John was placed on a working schedule at the hospital where he ate well balanced meals. His work schedule at the hospital consisted of homemaking activities (ex.: bedmaking, sweeping, elementary gardening) that paralleled his school program.

Psychological evaluation as of August, 1957, six years after enrollment, yielded an I.Q. of 41 on the Binet Form L, but on the block design subtest of WISC he obtained results comparable to M.A. 9-8 and I.Q. 65. As a result of concentrated environmental and medical care John became more alert, was able to concentrate for a longer period of time and his motivation toward a testing situation increased. The examining psychologist was of the opinion that if John's passive dependency could be overcome and despite his poor verbal intelligence, he could become a candidate for a manual and occupational training program. In 1957 John responded well to an audiometric examination which revealed a severe hearing loss in both ears. Although the audiometric test indicated such a loss, his speech pattern

was not that of a person with a severe loss of hearing. In addition, John's response were not sufficiently definite to consider the results valid and reliable. Training School staff was informed that John had a hearing loss and that he was able to grasp the meaning of communication if the speaker talked clearly, loudly and permitted John to see his face.

Psychological evaluation of April, 1959, eight years after enrollment, revealed a considerable increase in intellectual functioning since the last evaluation of 1957. John obtained the following scores;

WAIS: Verbal I.Q. 66; Performance I.Q. 60; Full Scale I.Q. 61; Est. M.A. 9-2.

Amons Picture Voc. Test: M.A. 7-11, I.Q. 53

Goodenough Draw-a-Man: M.A. 5-9, I.Q. 39

The difference between the Full Scale I.Q. in 1957 and in 1959 was over 20 points. While different tests were used it was felt that this alone could not account for such an increase in I.Q. In the opinion of the examiner the relevant factors responsible for this improvement were increased motivation toward the testing and ability to concentrate for a longer period of time. Placement in an academic extension class was recommended to develop further his educational potential. Vocational evaluation revealed that he developed to a point of activity showing a sense of responsibility, but still lacking in drive and initiative. Of interest are findings of the speech evaluation which showed that spontaneous speech was readily intelligible and in contrast to previous evaluation he was reported as verbalizing freely.

The recent psychological evaluation showed the following results (1960);

WAIS: Verbal I.Q. 71; Performance I.Q. 73; Full Scale I.Q. 70; Est. M.A. 10-6.

Ammons Full Range Picture Voc. Test: M.A. 9-2, I.Q. 61

Draw-a-Person Test: M.A. 6-9, I.Q. 46

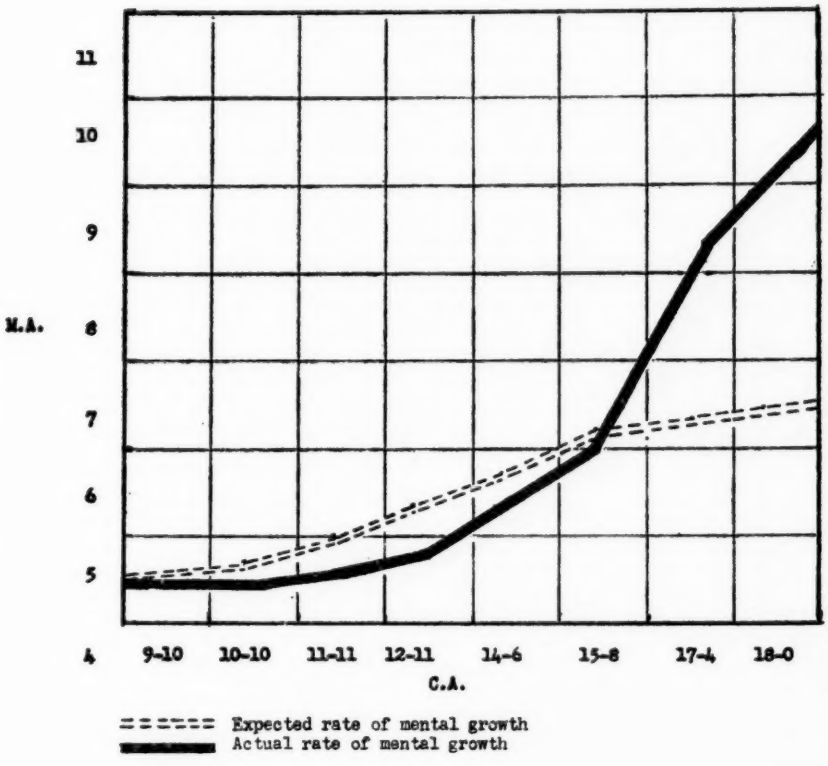
Comparison between present and last year's results shows consistent increase for all tests used. Obtained I.Q. of 70 on the WAIS is an increase of 21 points since admission to The Training School. The most recent audiometric evaluation, which is considered fairly reliable, reported that John had a severe hearing loss in the right ear, and a slight loss in the left ear which would account for his good speech production and observed reactions to sound stimuli. Vocational evaluation shows adequate adjustment. John has a program of helper at the hospital where he takes his meals, about two hours on the farm and about the same time at the laundry each day. He is quiet, dependable and responsive to supervision, getting along well with everyone. His present program seems suitable for his health and happiness.

Discussion

The case description shows overall growth of John since his admission to The Training School. Figure I shows John's intellectual growth in comparison to prognosis at the time of admission to The Training School. One of the weaknesses of this comparison is in the fact that Stanford-Binet

FIGURE I

Expected and Actual Rate of Mental Growth



and WAIS are not directly comparable. However, this alone should not account for such significant difference in I.Q.'s. Of interest might be the fact that the spurt in intellectual growth, interest in his environment and the more favorable vocational potential, occurred approximately at the time of puberty, which might be related to an early treatment of Froelich's syndrome.

SUMMARY

Two cases of delayed and retarded development were presented. Both boys received yearly reviews by the various professional departments of The Training School, at which time their programs and progress were discussed and the treatment for the following year was planned. In both cases admission impression testing was not favorable or optimistic. However, the authors believe that extensive medical, social and therapeutic treatment available at The Training School helped to foster development beyond expected levels. The authors believe that the two cases described in this study are excellent examples of the successful utilization of the multi-disciplinary approach to the training and treatment of the mentally retarded individual.

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An Experience Unit On Occupational Training For Educable Mentally Retarded Students

paul c. burns

THE teacher of an educable mentally retarded class usually finds that certain parts of an education program for the students are already organized when he arrives upon the scene. For example, if such classes are to be organized, the machinery for such an organization has been set in motion. Space has been allotted, equipment purchased, and perhaps general objectives for the program have been spelled out. What remains to be done (and this is perhaps the most difficult task confronting a teacher) is to organize desirable learning tasks or experiences to the best advantage of the learner.

How can the teacher of the educable mentally retarded fit together the assorted recommendations for a program for these learners into a sensible arrangement with scope and sequence of work? There may be a number of alternatives. A teacher could plan a series of isolated lessons, each calculated to teach a certain concept or group of concepts. There are indeed times when a specific lesson will need to be taught without much regard for what is being done during the rest of the school day. For example, spelling might be an area lending itself to this sort of work; handwriting might be another; and behavior incidents which occur irregularly would engender a third type of lesson of this nature.

On the whole, however, single isolated lessons probably cannot hope to be equal to the task of providing learning situations which foster abilities of planning and carrying out plans, or which develop firm understandings of the basic ideas we might wish educable mentally retarded students to have. They simply do not provide enough related experience to do the job.

What is needed for groups of educable mentally retarded learners is a unit organization in which related ideas are studied. Many schools of today teach by the unit plan, but these units leave something to be desired as units of study for educable mentally retarded students. The typical unit used in a classroom with normal children is a teaching unit or a resource unit. The difficulty with trying to use this same sort of unit arises from the fact that reading is usually a major means of acquiring the information. Educable mentally retarded students cannot do the amount and kind of reading necessary in such a unit, yet they are in need of understandings

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similar to those included in a teaching or resource unit. The aim must be to get more activity of a non-reading type into the units of study. This may be done through what is generally designated as an experience unit. The chief differences between teaching or resource units and experience units would be these points of emphasis in the experience unit:

(1) Involves more direct activity in the way of field trips, first hand study, and construction activities.

(2) May be broader in scope than the teaching or resource unit. For example, instead of a science unit on "How Plants Grow" which might include a small number of experiments in addition to reading and other audio-visual aids, an experience unit for an educable mentally retarded group might be "How We Make Our Home Attractive", a part of which would be concerned with the care of lawns, trees, shrubs and the like. In addition there would likely be consideration of making the interior of the house attractive as well as the exterior.

(3) May have goals different from the goals established in a unit for normal children. For example, when studying farming in the usual class, the emphasis may be upon the accumulation of certain concepts about farming — how farms differ in size and function in different sections of the United States; how farming methods are adapted in the types of farm land available; why certain crops are predominant in certain areas; how crops ultimately reach the consumer and the like. With educable mentally retarded students, instead of attempting to draw broad generalizations about the role of agriculture in our economy, it might be better to concentrate upon a functional knowledge of what goes into farming — what the jobs are; why they are done in a particular way; how the farmer can sell his goods to best advantage, and the like. This would be done with an eye toward the possibility of adult employment on farms for some of the class members.

(4) Tends to be more loosely organized than units used with normal pupils. This suggests that the work may contain more of the day-to-day type of planning than a teaching or resource unit; there are considerably more changes in plans than may be found in a regular unit of work; and, to a certain extent, the sequence of jobs in preparing an experience unit may be altered from the sequence of steps in building a teaching or resource unit to be used by a regular class.

Generally speaking, the following sequence of steps for the teacher to use in planning an experience unit may serve as a general guide:

1. Select a unit of experience that would seem to be of importance in the lives of people in general.

2. List the educational resources of the community which might aid the study, and note specifically how each could be used.

3. List the major understandings that the students should have when the unit of work is complete.

4. Plan how to evaluate how well the students have grasped each of the major understandings. Possibly most of the evaluation will be on the basis of teacher observations of one kind or another rather than by paper-and-pencil tests. Do not think of the evaluation as something done only at the end of the unit. It is especially important in the experience unit that the teacher frequently asks himself; "Did the pupils appear to grasp the idea that was intended? If not, how can it be presented in another way so that it will get across?"

5. Plan the original motivation for the unit, and sketch roughly the sequence of activities during the unit. Try to point to the places where the skills work done in the separate periods can be fitted into the unit. Included in this step would also be the accumulation of materials and teaching aids which are to be used.

6. Teach the unit. When teaching the unit, these parts are particularly important:

a. Motivational activity — getting the pupils interested in the study and appreciative of its importance.
b. Developmental activities.
c. Summarizing or culminating activity.
d. Evaluation.

A sample unit on "Occupational Training" prepared for educable mentally retarded adolescents may serve to illustrate the approach recommended in this discussion.

Occupational Training

I . Objectives for the unit
- A. To recognize the different kinds of jobs required in life
- B. To find out what the job is (by its title)
- C. To find out how some jobs are done
- D. To find out how to best do a job
- E. To find out information about available jobs in the immediate area
- F. To find out the individual's qualifications for a particular job
- G. To perform some "pre-job experiences"

II. Original Motivation:
- A. Discussion of work plans for when they are adults
- B. Bulletin board display of various occupations
- C. A film on types of community work

III. Activities for the unit
- A. Review of basic elementary ideas:
  1. Different fathers and mothers do different kinds of work. Find out what is involved in your parent's job.

2. What are the different jobs around the school: custodians, secretaries, cafeteria workers, and the like. Visit and talk with people about their job. (It may be necessary to spend some time considering how to interview people before undertaking this activity.)
3. Discussion of the difference of "seasonal" and "whole year" job.
4. Visit to see construction work of a building in progress. Talk about the many different types of workmen necessary for job: laborers, carpenters, plumbers, painters, plasterers, bricklayers, and electricians.
5. Discussion of work habits and personal appearance as determining factors in ability to get and hold a job.
   a. Punctuality (teach telling of time, if necessary)
   b. Ability to follow directions (teach games that call for direction following and exercises that say "cut *on* the line" and the like)
   c. Stress caring for tools and materials used in the classroom.
   d. Emphasize special safety procedures for various jobs.

B. Survey of jobs in the local community (and emphasis upon those where there may be possibility for later employment)
   1. Job application forms
   2. Work permit forms

C. Discussion of which jobs are in the range of capabilities

D. Discussion of people they admire in the community and the work they perform

E. Excursions
   1. Garage — mechanics and others explaining their jobs
   2. Hotel — explaining of the types of work done by bell boy, bus boy, maids, and waitresses
   3. Hospital — service jobs
   4. Industries — semi-skilled and unskilled jobs
   5. Miscellaneous — parks, stores (clerks, stock boys, delivery boys), theaters, and the like

F. Bring in group of workers from the community into the class to discuss jobs, as
   1. Man who repairs shoes
   2. A painter

G. Visit to class from students doing job experience

H. Moving pictures and filmstrips of various jobs (Particularly to follow up actual visits)

I. Doing of "pre-job experience" about the school (or after school employment in neighborhood jobs)
   1. Helpers in cafeteria
   2. Assistant janitors

J. Reading of books, and articles dealing with occupations (some by pupils and some by teacher)

K. Discussion of saving and banking procedures.

IV. Summarizing Activities
   A. A program of role playing the various occupations
   B. Maintenance of a class scrapbook (pictures and stories)

V. Evaluation of the unit
   A. Is student aware of various local jobs and does he know how to find out about a job?
      1. Does he read want-ads and local employment bureau's announcements?
      2. Does he know what is done in the jobs?
      3. Is he aware of the assets necessary for success in various jobs?
   B. Can the student submit himself to an honest personal evaluation in relation to a job?
      1. Is he interested in the job?
      2. Is he prepared to do the job?
      3. Are his traits acceptable for the job? (a realistic viewing of his limitations)
   C. Can the pupil evaluate himself honestly in terms of personal characteristics?
      1. Is his personal grooming acceptable?
      2. How is his sense of responsibility? Is he on time, sticks to his job until finished, etc?
      3. How is his self-control?
      4. How about neatness in work habits?
   D. Can the student pass a simple test over how some jobs are done?
   E. Can the student pass a test over specific job details, such as filling out application forms, work permit requests, and the like?
   F. How did the student perform on his "pre-job experience" work?
   G. What plan of budgeting is the student following?

Summary

In summary, the experience unit would appear to hold considerable promise for the education of educable mentally retarded students. The ideas involved are not new by any means, but they do need amplification and application. It is not realistic to hope that a number of appropriate units might be available to teachers serving to make the course of study for a class of educable mentally retarded students.

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